

U.S. Patent Application Serial No. 09/147,052
Amendment Accompanying RCE dated May 12, 2004
Reply to OA of November 13, 2003

IN THE CLAIMS

Please cancel claim 42 without prejudice or disclaimer. Please amend claims 20, 25-30, 32-33, 41, 43 and 44, as follows:

Claims 1-19 (Canceled).

Claim 20 (Currently amended): A fusion protein, comprising:

(i) an antigenic protein isolated from ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum that ~~causes~~ causing an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum immune serum or ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum infected serum, and

(ii) a signal polypeptide of Herpesvirus outer membrane protein, said signal polypeptide being ligated with said antigenic protein isolated from ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum at the N terminus thereof ~~such that, thereby to secrete~~ said antigenic protein is secreted extracellularly, and

wherein upon expression of said fusion protein in a host cell, said antigenic protein is secreted extracellularly.

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Claim 21 (Original): A fusion protein according to claim 20, wherein a sequence of said antigenic protein is amino acids 64-456 of SEQ ID NO:2 or amino acids 693-1086 of SEQ ID NO:4.

Claim 22 (Previously presented): A fusion protein according to claim 20, wherein said signal polypeptide is isolated from a herpes virus showing infection to fowl.

Claim 23 (Previously presented): A fusion protein according to claim 22, wherein said signal polypeptide is isolated from a Marek's disease virus.

Claim 24 (Previously presented): A fusion protein according to claim 23, wherein said signal polypeptide is gB protein isolated from a Marek's disease virus.

Claim 25 (Currently amended): A recombinant Avipox virus having a DNA coding for a fusion protein, comprising:

(i) an antigenic protein isolated from ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum ~~that causes and causing~~ an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum infected serum, and

(ii) a signal polypeptide of Herpesvirus outer membrane protein, said signal polypeptide being ligated with said antigenic protein isolated from ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum at the N terminus thereof such that, thereby to secrete said antigenic protein is secreted extracellularly, and

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wherein upon expression of said fusion protein in a host cell, said antigenic protein is secreted extracellularly.

Claim 26 (Currently amended): A recombinant live vaccine for use in fowl against anti-fowl ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* infection, comprising as an effective ingredient a recombinant Avipox virus comprising having a DNA coding for a fusion protein, comprising:

(i) an antigenic protein isolated from ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* that causes and causing an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* immune serum or ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* infected serum, and

(ii) a signal polypeptide of Herpesvirus outer membrane protein, said signal polypeptide being ligated with said antigenic protein isolated from ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* at the N terminus thereof such that, thereby to secrete said antigenic protein is secreted extracellularly, and

wherein ~~the~~ said fusion protein ~~is capable~~, upon administration into a host cell, ~~of immunizing that~~ immunizes said host cell against subsequent infection with ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum*, and said antigenic protein is secreted extracellularly.

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Claim 27 (Previously presented): A fusion protein according to claim 20, wherein a sequence of said signal polypeptide is amino acids 1-63 of SEQ ID NO:2 or amino acids 1-672 of SEQ ID NO:4.

Claim 28 (Previously presented): A fusion protein according to claim 20, wherein

(a) a sequence of said signal polypeptide is amino acids 1-63 of SEQ ID NO:2 and a sequence of said antigenic protein is amino acids 64-456 of SEQ ID NO:2, or

(b) a sequence of said signal polypeptide is amino acids 1-672 of SEQ ID NO:4, and a sequence of said antigenic protein is amino acids 693-1086 of SEQ ID NO:4.

Claim 29 (Currently amended): A fusion protein according to claim 20, wherein said antigenic protein causes an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum immune serum or ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum infected serum ~~in vivo~~ in vivo.

Claim 30 (Currently amended): A fusion protein according to claim 28, wherein said antigenic protein causes an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum immune serum or ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum infected serum ~~in vivo~~ in vivo.

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Claim 31 (Withdrawn): A DNA coding for a fusion protein comprising

(i) an antigenic protein isolated from Mycoplasma gallisepticum causing an antibody-antigen reaction with Mycoplasma gallisepticum immune serum or Mycoplasma gallisepticum infected serum, and

(ii) a signal polypeptide of Herpesvirus outer membrane protein, said signal polypeptide being ligated with said antigen protein isolated from Mycoplasma gallisepticum at the N terminus thereof, thereby to secrete said antigenic protein extracellularly,

wherein said DNA comprises

(i) a first DNA segment isolated from Mycoplasma gallisepticum and coding for an antigenic protein causing an antibody-antigen reaction with Mycoplasma gallisepticum immune serum or Mycoplasma gallisepticum infected serum, and

(ii) a second DNA segment isolated from a Marek's disease virus gene and coding for outer membrane protein signal sequence, said first and second DNA segments being ligated to each other.

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Claim 32 (Currently amended): A recombinant Avipox virus ~~having~~ comprising a DNA coding for a fusion protein, comprising:

(i) an antigenic protein isolated from ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum ~~that causes and causing~~ an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum immune serum or ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum infected serum, and

(ii) a signal polypeptide of Herpesvirus outer membrane protein, said signal polypeptide being ligated with said antigenic protein isolated from ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum at the N terminus thereof such that, thereby to secrete said antigenic protein is secreted extracellularly, and

wherein said DNA comprises:

(i) a first DNA segment isolated from ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum that codes and coding for an antigenic protein which causes ~~causing~~ an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum immune serum or ~~Mycoplasma gallisepticum~~ Mycoplasma gallisepticum infected serum, and

(ii) a second DNA segment isolated from a Marek's disease virus gene ~~and coding for that~~ codes for a signal polypeptide of Herpesvirus outer membrane protein signal sequence, said first and second DNA segments being ligated to each other such that said antigenic protein is secreted extracellularly, and

wherein upon expression of said fusion protein in a host cell, said antigenic protein is secreted extracellularly.

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Claim 33. (Currently amended): A recombinant live vaccine for use in fowl against anti-fowl ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* infection comprising as an effective ingredient a recombinant Avipox virus having a DNA coding for a fusion protein, comprising:

(i) an antigenic protein isolated from ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* that ~~causes~~ and causing an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* immune serum or ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* infected serum, and

(ii) a signal polypeptide of Herpesvirus outer membrane protein, said signal polypeptide being ligated with said antigenic protein isolated from ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* *gallisepticum* at the N terminus thereof such that, ~~thereby to secrete~~ said antigenic protein is secreted extracellularly, and

wherein said DNA comprises:

(i) a first DNA segment isolated from ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* that ~~codes and coding~~ for an antigenic protein which causes ~~causing~~ an antibody-antigen reaction with ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* immune serum or ~~Mycoplasma gallisepticum~~ *Mycoplasma gallisepticum* infected serum, and

(ii) a second DNA segment isolated from a Marek's disease virus gene ~~and coding for that~~ codes for a signal polypeptide of Herpesvirus outer membrane protein ~~signal sequence~~, said first and second DNA segments being ligated to each other such that said antigenic protein is secreted extracellularly, and

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wherein ~~the~~ said fusion protein ~~is capable~~, upon administration into a host cell, ~~of immunizing that~~ immunizes said host cell against subsequent infection with *Mycoplasma gallisepticum* *Mycoplasma gallisepticum*, and said antigenic protein is secreted extracellularly.

Claim 34 (Withdrawn): A DNA according to claim 31, wherein said second DNA segment is isolated from a herpes virus showing infection to fowl.

Claim 35 (Withdrawn): A DNA according to claim 31, wherein said signal polypeptide is isolated from a Marek's disease virus.

Claim 36 (Withdrawn): A DNA according to claim 31, wherein said signal polypeptide is isolated from DNA coding for gB protein of a Marek's disease virus.

Claim 37 (Withdrawn): A DNA according to claim 31, wherein a sequence of said second DNA segment is codons 1-63 of SEQ ID NO:1 or codons 1-672 of SEQ ID NO:3.

Claim 38 (Withdrawn): A DNA according to claim 31, wherein a sequence of said DNA is SEQ ID NO:1 or SEQ ID NO:3.

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Claim 39 (Previously presented): A recombinant Avipox virus according to claim 32, wherein a sequence of said second DNA is codons 1-63 of SEQ ID NO:1 or codons 1-672 of SEQ ID NO:3.

Claim 40 (Previously presented): A recombinant Avipox virus according to claim 32, wherein a sequence of said DNA is SEQ ID NO:1 or SEQ ID NO:3.

Claim 41 (Currently amended): A recombinant Avipox virus according to claim 32, wherein said antigenic protein causes an antibody-antigen reaction with Mycoplasma gallisepticum Mycoplasma gallisepticum immune serum or Mycoplasma gallisepticum Mycoplasma gallisepticum infected serum ~~in vivo~~ in vivo.

Claim 42 (Canceled).

Claim 43 (Currently amended): A recombinant virus according to claim 32, wherein said fusion protein does not include a membrane anchor peptide ~~sequence~~.

Claim 44 (Currently amended): A recombinant Avipox virus according to claim 32, wherein, when an avian cell is infected with said recombinant virus ~~is infected into an avian cell~~, said antigenic protein is secreted outside ~~the~~ said avian cell.

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Claim 45 (Withdrawn): A recombinant live vaccine according to claim 26, wherein a sequence of said DNA is SEQ ID NO:1.

Claim 46 (Withdrawn): A recombinant live vaccine according to claim 26, wherein a sequence of said DNA is SEQ ID NO:3.